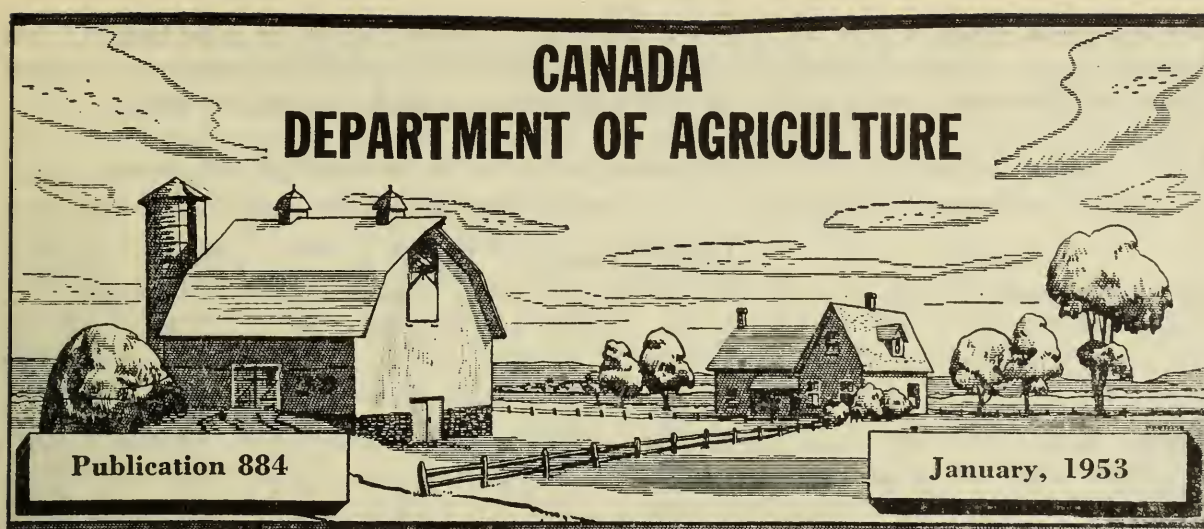


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## VARIETIES OF LINSEED FLAX

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### *Experimental Farms Service*

Since its establishment many years ago, the Experimental Farms Service of the Department of Agriculture in co-operation with provincial institutions across Canada has conducted critical field tests on a large number of varieties of flax. As a result, from time to time new varieties have been introduced which eventually replaced those in general use.

Prior to 1934, Crown and Premost were widely grown in most parts of the flax producing areas. Due to their susceptibility to flax wilt, however, they were gradually replaced by the wilt-resistant varieties Bison and Redwing. By 1940 Bison made up 65 to 70 per cent of the crop marketed in Western Canada, but it proved very susceptible to flax rust and was badly damaged by epidemics occurring in Saskatchewan and Manitoba. Royal, a high yielding variety introduced in 1939, has some resistance to rust.

Redwing, introduced in 1934, increased in Manitoba until in 1940 it occupied approximately 40 per cent of the acreage. There is still a considerable acreage of Redwing in Alberta. In Saskatchewan, however, this variety has never occupied more than about 12 per cent of the total acreage. Redwing, because of its early maturity has continued to be recommended for districts where autumn frosts are a hazard. It has some susceptibility to flax rust and in recent years has received more competition from new resistant varieties.

Royal, by 1944, extended over 60 to 70 per cent of the total area in flax. At this time other rust-resistant varieties grown extensively were Viking, Walsh, Buda and Victory. The acreage in any one of these varieties has not exceeded 5 per cent in any year, and except for Victory the acreage is small.

In 1947, three varieties—Dakota, Rocket and Sheyenne were licensed for distribution in Canada. In the years following, Dakota was grown extensively. However, in 1948, a new form of rust was found attacking this variety which subsequently caused such heavy damage that it could no longer be recommended. Sheyenne, though still resistant to rust has not been productive. It is expected that it will be replaced by a recently named variety called Marine. This variety is a selection from the cross Sheyenne  $\times$  C.I. 975 and exceeds Sheyenne in yield, size of seed and oil content. Rocket is resistant to rust and



yields a good crop of seed of high oil content. It has gained in popularity from year to year. Nevertheless, in southern districts competition can be expected from the Redwood variety which was licensed for distribution in 1951.

Table 1—Summary of Data for all Stations in the Prairie Provinces 1949–51 Inclusive

Variety	Days to Maturity	Height	Wt. per 1000 K	Oil Content	Iodine Number	Test Weight
		in.	gm.	%	Wijs	lbs.
Bison.....	111	22.5	6.6	40.6	185.7	55.1
Dakota.....	110	21.5	6.0	39.3	192.7	55.7
Marine.....	108	20.5	5.7	40.2	195.1	55.3
Redwing.....	106	21.4	5.1	39.0	193.3	56.3
Redwood.....	114	22.4	6.2	41.2	192.9	54.9
Rocket.....	113	21.7	6.0	41.1	193.4	54.5
Royal.....	114	21.6	5.9	40.5	185.8	55.2
Victory.....	114	21.8	7.4	40.6	191.9	55.1
No. of stations reporting.....	16	28	19	15	15	25

**Bison** C.A.N. 2100—A selection by Dr. H. L. Bolley of the North Dakota Experimental Station, from commercial flax, distributed in Canada in 1930. Bison is slightly taller but about as late in maturity as Royal. The flower is distinctive in its dark blue violet colour. The oil content is good and the quality fair. Bison is resistant to flax wilt but very susceptible to races of flax rust now prevalent in Canada; also susceptible to pasmo and browning.

**Dakota** C.A.N. 3265—From the cross Renew  $\times$  Bison and selected by the United States Department of Agriculture. Dakota is rather early in maturity, of good height but not so strong as Redwing. The seed is of medium size, oil content only fair but quality good. Dakota is resistant to flax wilt, moderately tolerant to pasmo but susceptible to forms of rust now prevalent.

**Marine** C.A.N. 70—From the cross Sheyenne  $\times$  C.I. 975 and selected by the North Dakota Experiment Station; licensed for distribution in 1952. Marine is about as early in maturity as Redwing, of fair height and strength of straw. The oil content and quality are good. Marine is resistant to wilt and rust and fairly tolerant to pasmo. It is expected to replace Sheyenne and Redwing in areas where early maturity and rust resistance are essential.

**Redwing** C.A.N. 2140—An introduction from the Minnesota Experiment Station distributed in Canada in 1932. It is of medium height with strong straw. The ability to produce a good yield and mature early has permitted this variety to remain on the recommended list for the northern areas where frost may be a hazard. The seed is very small averaging 4.0 to 4.5 gms. per thousand seeds. Oil content is below average but the quality is good. Redwing is semi-resistant to wilt, rust and anthracnose, and susceptible to pasmo.

**Rocket** C.A.N. 101—From an Argentine 8C  $\times$  Redwing cross and selected by the Cereal Division, Central Experimental Farm. It is medium to late in maturity with straw of good strength. The seed averages about 6.0 gms. per thousand and contains a rather high oil content of good quality. It is resistant to rust and anthracnose, semi-resistant to wilt but susceptible to pasmo.

**Royal** C.A.N. 2266—A selection from Crown made at the University of Saskatchewan and distributed in 1939. Medium to late in maturity, it has a tendency to develop late tillers and branching and not ripen uniformly. It is of medium height with rather weak straw where ample moisture is available. The seed averages 4.8 to 5.6 gms. per thousand, is brown in colour with characteristic blotches of light colour over the large end of the seed. Royal has a high oil content but of average quality. It is moderately resistant to wilt and anthracnose, susceptible to rust in the seedling stage but showing considerable resistance in the mature plant stage, and susceptible to pasmo.

**Redwood** C.A.N. 40—From a Redson × C.I. 980 cross made at the Minnesota Experiment Station and distributed in Canada in 1951. It is as late or later in maturity than Royal or Rocket but ripening uniformly. The straw is of good height and strength. Seed is brown about the size of Bison and Royal; oil content and quality are very good. Redwood is resistant to forms of rust now prevalent in Canada, resistant to wilt and has fair tolerance to pasmo. It yields very well but its late maturity will limit its use.

**Sheyenne** C.A.N. 3272—From the cross Buda × Ottawa 770B and selected at the North Dakota Experiment Station. Early in maturity with straw of good strength. The seed is small, lighter brown than Redwing, rather low in oil content but producing oil of good quality.

**Victory** C.A.N. 3243—This variety was produced by the North Dakota Experiment Station and licensed for distribution in Canada in 1946. It is late in maturity and somewhat irregular in both maturity and height. Victory is distinguishable by a large white flower with blue anthers. The brown seed is very large with a rather high oil content of good quality. Victory is semi-resistant to rust, moderately susceptible to wilt and very susceptible to pasmo.

**Viking** C.A.N. 3211—Viking was selected at the North Dakota Experiment Station from the cross Bolley's Golden × Burbank's Golden. It is a very short strawed variety of rather late maturity. The seeds are large and of a bright yellow colour with a high oil content and very high quality. Viking is almost immune to rust forms now prevalent, resistant to wilt but very susceptible to pasmo.

### Variety Recommendations

In the variety recommendations for Manitoba, Redwood and Rocket are favoured for the southern areas including zones 1, 2 and 8, and Sheyenne and Redwing for all areas north of these zones. In Saskatchewan, Rocket is recommended for the southern zones with the exception of the southeast, where Victory is also recommended. Victory is also favoured in the central part of the province, zones 2A, B, E, 3A, B, C, and F. Dakota is recommended in the more northern zones, with Redwing in zone 4 in the extreme northern area. Royal is recommended for the southeastern zone 1 and 2A in Alberta. Dakota is recommended farther north in zone 2, and Redwing for the more northern areas in zones 3 and 4.

In Eastern Canada, and particularly in Ontario where the acreage has increased in recent years, later maturing varieties planted early can be expected to produce the best yields. Rocket has given excellent yields but Redwood should be equally satisfactory. For later planting, Redwing or Marine are more suitable than the later varieties.

Table 2—Yield of Flax Varieties in Bushels per Acre for the period 1949–1951 inclusive

Variety	Manitoba		Saskatchewan			Ontario	
	Morden	Brandon	Indian Head	Melfort	Saskatoon	Ottawa	Guelph
Bison.....	23.9	20.4	14.4	12.5	23.7	21.1	22.8
Dakota.....	23.5	23.7	13.4	13.6	23.3	18.4	21.2
Marine.....	22.3	15.5	12.2	12.7	.....	19.8	.....
Redwing.....	22.2	20.3	14.4	14.5	20.5	18.8	21.6
Redwood.....	28.9	25.4	15.5	12.5	.....	20.5	.....
Rocket.....	26.9	24.8	15.0	14.2	24.7	22.6	23.2
Royal.....	24.9	22.5	14.6	13.7	23.7	17.4	21.5
Victory.....	26.6	26.4	16.6	12.7	23.4	20.7	21.8



Summary of the Main Characters of the Flower, Capsule, and Seed of Leading Linseed Flax Varieties Grown in Canada

Variety	Flower Characters							Capsule Characters		Seed Characters		
	Flower size	Flower shape	Petal colour	Anther colour	Filament colour	Style colour		Stigma colour	Dehiscence	Septum	Size	Colour
						base	top					
Bison.....	medium	funnel	dark blue violet	blue	dark blue	dark blue	blue	mauve	semi dehis.	ciliate	medium	brown
Dakota.....	"	"	bluish violet	"	white	"	white or pale blue	"	"	smooth	"	"
Marine.....	"	"	medium light violet	"	"	blue or white	blue to white	"	"	ciliate	medium small	light brown
Redwing.....	medium small	"	bluish lavender	"	white to pale blue	pale blue	white	"	"	"	small	"
Rocket.....	medium large	flat open funnel	medium violet	"	white some- times blue	blue	"	pale mauve	indehiscent	"	medium large	"
Royal.....	medium	funnel	light violet	"	white to pale blue	pale blue	pale blue	mauve	semi dehis.	"	medium	brown light blotches over base brown
Redwood.....	"	"	blue violet	"	light blue	dark blue	"	"	"	"	"	light brown
Shenylene.....	"	"	medium light violet	"	white to blue	blue or white	blue	"	"	"	medium small	"
Victory.....	medium	flat open funnel	white	"	white	white	white	white	"	"	large	"
Viking.....	medium	flat open funnel	pale pink	yellow	"	"	"	"	indehiscent	"	"	light brown yellow